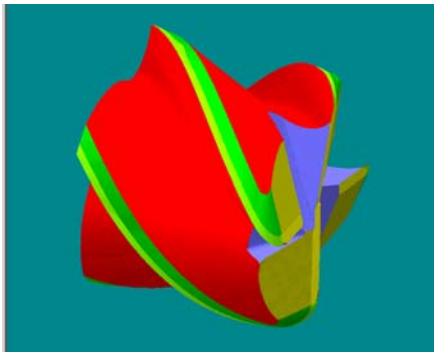
SCHNEEBERGER

Application Data Sheet

Radius Endmill

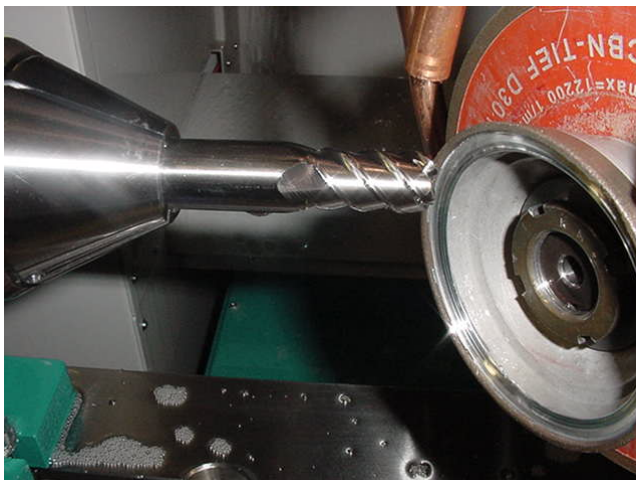


Cylindrical endmills with radius are standard tools used in High speed milling, die molding milling and milling applications in the aircraft industry. The benefits of the corner radius are an improvement of the surface quality of milled parts, a damage reduction of the corner of the endmill, a reduction of stress intensity effects of milled parts under tensile stresses.

1 Grinding Technology

Wheels: For a good surface finish an appropriate wheel has to be chosen. For Carbide possibly a grain size of D46 and a concentration of 100. The gashing wheel needs a high coating, in order to recover the complete height of the gashing depth, when rotation from the end into the flute.

Fixturing: Either a hydro expansion collet system or the UP40 collets (for automatic loaders) is a good choice to start with.



2 Programming

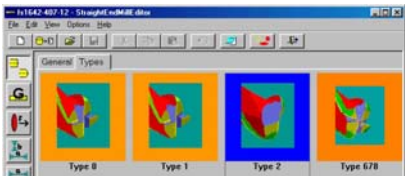
Step one: Choose one of the Endmill typos

Type 0: the gashing is straight

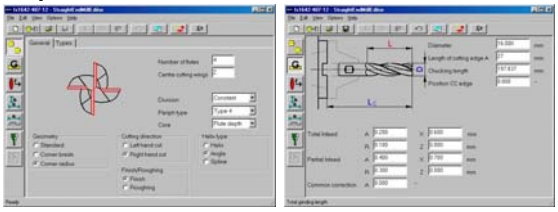
Type 1: the gashing is straight, equal to type 0, Radius is executed with fixed C-position. Normally used for small radius

Type 2: the gashing follows the radius, a helix correction in the radius part can be defined

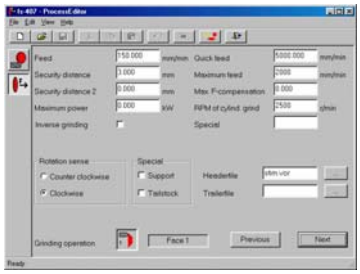
Type 678: the gashing is straight, with a helix correction such, that the rake face of the gashing joins the flute at the end of the radius



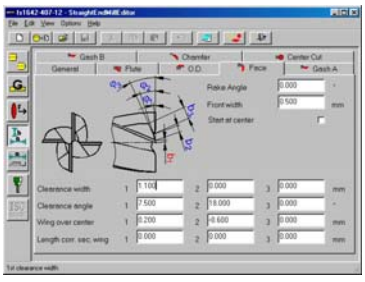
Step two: Define the General dimensions



Step three: Define all process parameter



Step four: Press the Database Key to insert geometry values taken from an established database. Make comfortable changes or add parameters in Quinto.

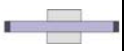


TECHNOLOGY FOR TOOLING

3 Cycle time for production

Tool specification

Diameter: 6mm, Cutting edges: 4, Length cutting edge: 35mm, Helix angle: 50deg and Material: HM

Operations		Flut 1 	Gashing 1 	Center Cutting 	O.D. 1 	Face 	Corner Brake 1 
Feed [mm/min]	2000	90	100	180	220	70	120
Power [kW]		2	2	1	1	1	1
Cutting speed [m/s]		16	24	24	24	24	24
Wheels							
Grinding time [s]	23	172	50	309	256	62	38
Total cycle time [s]	**15 Min 8 s**						

The above cycle times are indicative. The material to be ground, other grinding wheels and other coolants can influence the cycle times considerably.

Machine and Software Requirements

Machines: 5 axes CNC grinders: CORVUS GDS, GEMINI DMR, NORMA CFG
Control: Fanuc 160i
Coolant: Water soluble, pressure 6 – 7 bar
Software: Quinto NT

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